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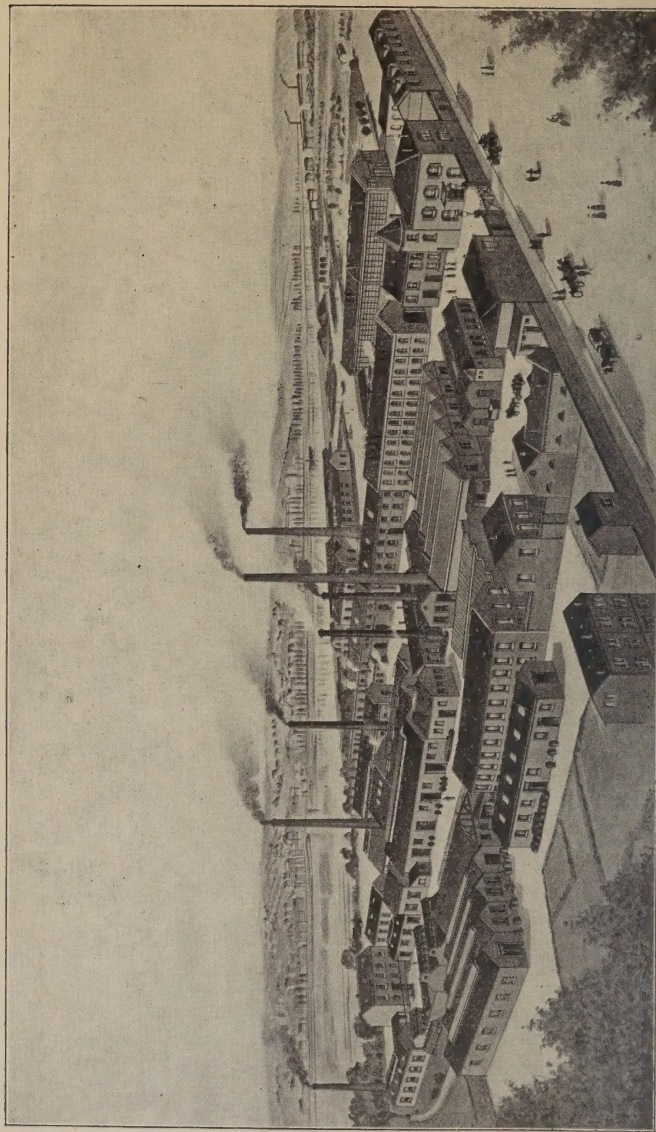
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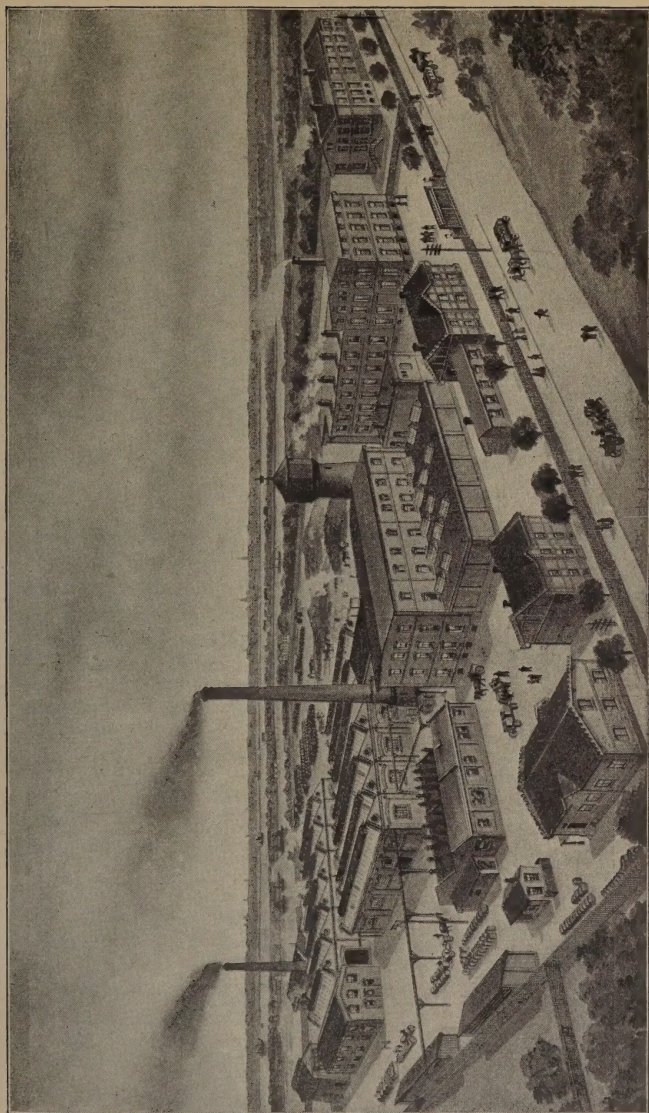
Company

MANUFACTURE LYONNAISE DE MATIÈRES COLORANTES, LYONS.



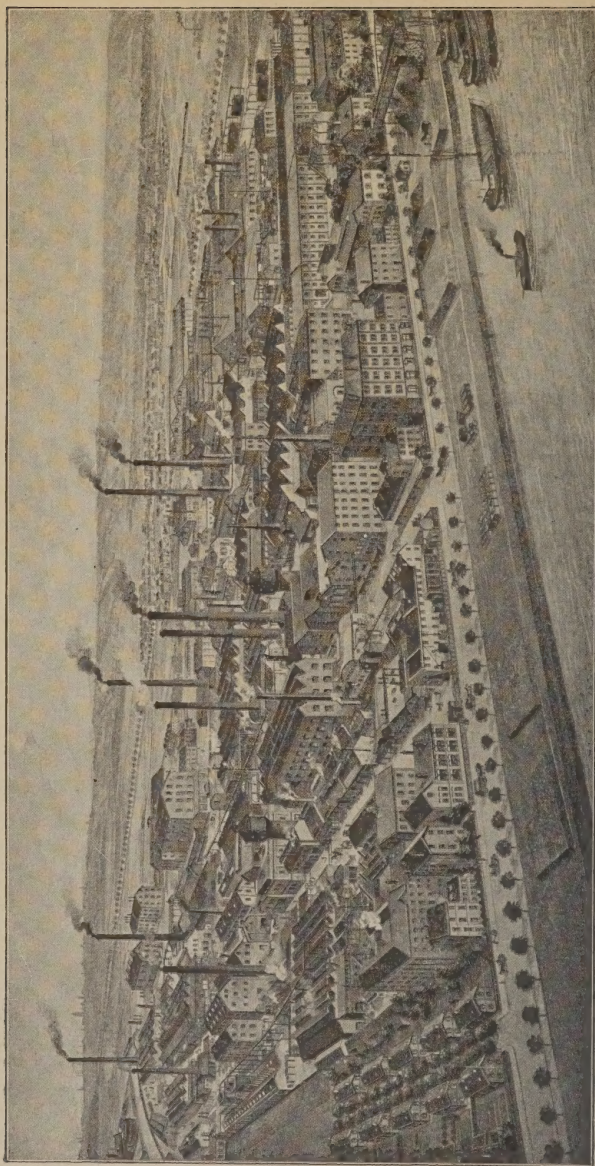
Works "La Mouche".

RUSSIAN ANILINE COLOUR WORKS LEOPOLD CASSELLA & CO., RIGA.



Works at Riga.

LEOPOLD CASSELLA & CO., G. m. b. H., FRANKFORT O. M.



Works at Mainkur near Frankfort o. M.

COTTON YARN PRINTING



CASSELLA COLOR COMPANY

182 AND 184 FRONT STREET

NEW YORK

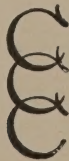
BOSTON: 39 OLIVER STREET

PHILADELPHIA: 126 AND 128 SOUTH FRONT STREET

PROVIDENCE: 64 EXCHANGE PLACE

ATLANTA: 47 NORTH PRYOR STREET

MONTREAL: CANADA, 59 WILLIAM STREET.



On account of the liability of Nitrazol C, pat., to spontaneous combustion, we do not carry this article in stock. Wherever the use of same is mentioned in this hand-book, we recommend, instead, the use of diazotized **Paranitraniline**, for the coupling of our colors. The final result is exactly the same.

CASELLA COLOR COMPANY.

COTTON YARN PRINTING.

Cotton yarn is printed either

- A) in hank form or
- B) in form of warps or single threads.

A. PRINTING OF COTTON HANKS.

Bleached yarn is usually used, the printing being done only in particular cases on yarn which is simply boiled.

The boiling and bleaching is carried out in the customary manner.

Printing: Special machines are used for yarn printing the rollers of which produce the desired patterns. For printing the paste on the yarn the rollers have elevations, which are arranged either horizontally or vertically to the axle of the roller. The first-mentioned kind (Fig. 1a and b) is used for the production of fine designs showing only one colour, the latter (Fig. 2a and b, see next page) for coarser patterns in various colours.

Thickenings: For yarn printing with Basic Colours, Diamine Colours, and Chrome Colours, tragacanth solution is as a rule used as a thickener, because printed yarns are frequently not washed after steaming and tragacanth hardens the fibre the least; deeper shades are obtained by adding a little wheat starch. Gum Senegal is sometimes used in connection with Basic and Diamine Colours for light shades. For Immedial Colours, British gum particularly has proved a very suitable agent, with the possible addition of a little starch.

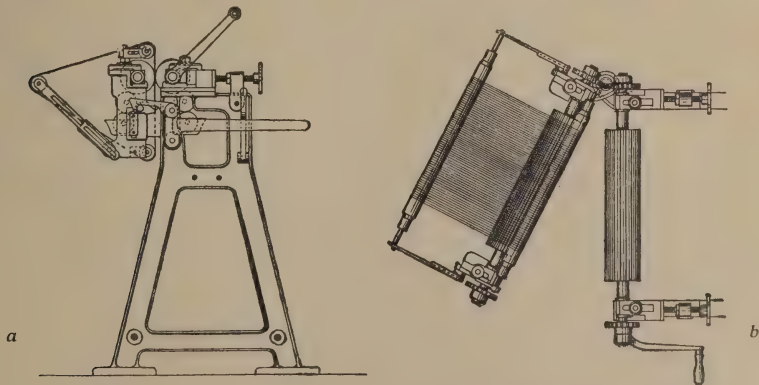


Fig. 1. Yarn-Printing Machine for One-Colour Printing (Pearl Printing).

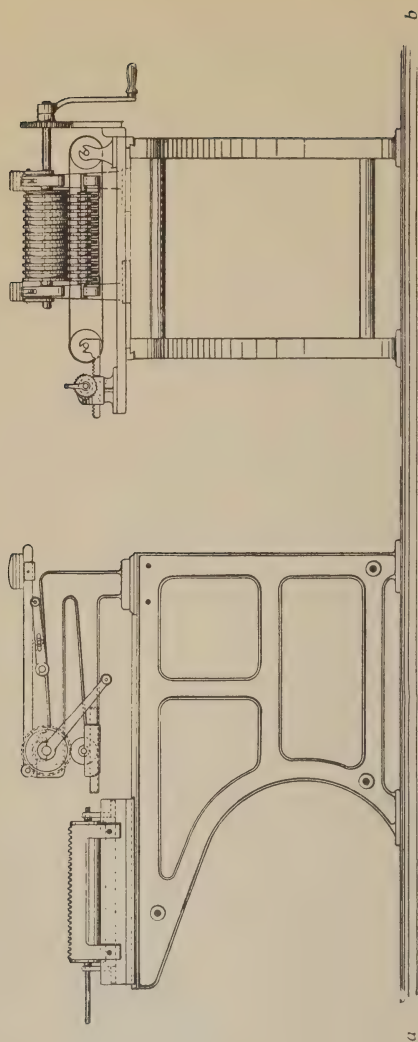


Fig. 2. Yarn-Printing Machine for coarse One-Colour Prints and Multi-Coloured Prints.

DIRECT PRINTING.

A. DIRECT PRINTING WITH BASIC COLOURS.

For this purpose, the following dyestuffs are used principally:

For Yellow and Orange:

Thioflavine T, TCN
Paraphosphine GG, G, R
Diamond Phosphine GG, PG, R, D
Tannin Orange R, GG.

For Violet:

Tannin Heliotrope
Crystal Violet 10B
Methyl Violet, all brands.

For Green and Olive:

For Red:

Irisamine G, G extra
Safranine, all brands
Magenta Ia. Dia. large and small crystals
Magenta, all brands
Cerise Ia
Geranium GN
Russian Red B, G.

Solid Green, all brands
Malachite Green conc.
Brilliant Green, all brands;
further, combinations of
New Methylene Blue N and
Thioflavine T
or
New Methylene Blue N, GG and
Diamond Phosphine GG, R, D.

For Blue:

New Methylene Blue N, NSS, GB, NX, R, 3R, GG
Methylene Blue BB, DBB
New Blue, all brands
Acetinduline R Paste, 3146J
Indazine, all brands
Naphtindone BB.

For Brown:

Bismarck Brown, all brands
Chrysoïdine, all brands;
further, combinations of
Thioflavine T with Safranine
and New Methylene Blue N
or
Diamond Phosphine GG, R, D with
Safranine and New Blue.

For Grey:

Methylindone B, R
Metaphenylene Blue, all brands.

For Black:

Printing Black X
Jute Black GN, 8174, 09624.

Directions for Printing:

Recipe I

I. General Directions:

10	15—20	30	40	parts	dyestuff are dissolved warm in
80	120	150	180	„	acetic acid of 8° Tw.,
—	10	20	20	„	acetine and
340	330	260	220	„	water, and mixed thoroughly with
20	20	20	20	„	wheat starch and
500	400	400	360	„	tragacanth solution (65:1000), the whole being then boiled. After stirring until cold,
25	50	60	80	„	tannic acid dissolved in
25	50	60	80	„	acetic acid of 8° Tw. are added.
1000 parts.					

Recipe II

II. Directions for Acetinduline:

100	parts	dyestuff (paste)	are mixed well with
200	„	acetic acid of 8° Tw.,	
20	„	wheat starch and	
580	„	tragacanth solution (65:1000)	
		and boiled; when cold,	
50	„	tannic acid dissolved in	
50	„	acetic acid of 8° Tw.	are added.

1000 parts.

Recipe III

III. Directions for Naphtindone BB:

30	parts	dyestuff	are dissolved warm in
70	„	glycerine,	
150	„	acetic acid of 8° Tw. and	
200	„	water; the whole is mixed well with	
20	„	wheat starch and	
380	„	tragacanth solution (65:1000), and	
		boiled. After stirring until cold,	
60	„	tannic acid dissolved in	
60	„	acetic acid of 8° Tw. and	
3	„	chlorate of soda dissolved in	
27	„	water	are added.

1000 parts.

Steaming and Aftertreatment: After printing and drying, the yarn is steamed for $\frac{1}{2}$ to $\frac{3}{4}$ hour in a steamer at slight pressure. In order to completely fix the colour, the yarn is usually treated, after the steaming, for from 10 to 20 minutes in a bath of 40 to 50° C. (105—120° F.) containing 4—8 oz tartar emetic per 10 gallons of liquor or a corresponding quantity of some other antimony salt; in order to neutralise the acid which is being liberated, 4—8 oz chalk or a little soda may be added. The yarn is finally washed, soaped if necessary at 40° C. (105° F.), rinsed, and dried.

Very frequently, yarns printed with Basic Colours are woven up without first being washed. In such case, the yarns before printing are prepared with stannate of soda, the preparation consisting in a treatment for some time with a solution of stannate of soda of 4° Tw., the goods being then wrung off, left lying for an hour, hereafter soured off with sulphuric acid 1° Tw., and finally rinsed very thoroughly. The yarns prepared in this manner are then printed with the above-mentioned print colours containing tannic acid, dried, and steamed for about $\frac{1}{2}$ to $\frac{3}{4}$ hour, after which they may be woven up without further rinsing.

B. DIRECT PRINTING WITH IMMEDIAL COLOURS.

The Immedial Colours are very well adapted for the production of prints on cotton yarn of good fastness to washing and light. The "Immedial Colours for Printing" come in the first place into consideration.

For Blue and Violet:

Immedial Indone B Double for Printing
 Immedial Indone R Double for Printing
 Immedial Direct Blue B Double for Printing
 Immedial Indone Violet B Double for Printing.

For Green and Olive:

Immedial Green GG Double for Printing
 Immedial Deep Green G Double for Printing
 Immedial Olive 3G Double for Printing.

For Yellow and Orange:

Immedial Yellow GG Double for Printing
 Immedial Orange C Double for Printing.

For Brown:

Immedial Bordeaux GF Double for Printing
 Immedial Maroon B Double for Printing
 Immedial Brown BR Double for Printing
 Immedial Cutch O Double for Printing.

For Grey and Black:

Immedial Carbon B for Printing.

For Red Prints:

Immedial Purple C also is suited.

IV. Printing Directions for Immedial Colours "for Printing".					Recipe IV
10	40	60	parts	dyestuff are mixed with	
10	20	30	"	glycerine,	
20	40	60	"	glucose and	
20	30	40	"	caustic soda lye of 75° Tw., the	
				whole being then heated for abt.	
				¼ hour with	
20	40	40	"	Hyraldite C extra	
				1:1 (dissolved in water) and	
220	140	70	"	water to a temperature of 60° C.	
				(140° F.). After dissolving, the	
				whole is well mixed with	
200	200	200	"	British gum thickening (300:1000)	
				and	
500	500	500	"	Alkaline Thickening.	
1000 parts.					

Alkaline Thickening:

150—200 parts British gum are boiled up with
 500 " water and
 300 " caustic soda lye of 75° Tw., and stirred
 until cold.

1000 parts.

After printing, the yarns are dried and steamed with hot steam (about 102° C. or 216° F.) as free from air as possible.

Steaming is best carried out in a steam-jacketed iron boiler of moderate size. When the yarn has been put in, the boiler previous to admitting the direct steam is heated by means of the casing, and, in order to quickly remove the air contained in the boiler, steam is blown in rapidly for some minutes while leaving the steam exit valve open. This valve is then nearly closed and the steaming continued for about $\frac{1}{2}$ hour at slight pressure.

After printing, the yarns are passed through a bath slightly acidulated with hydrochloric acid ($\frac{1}{2}\%$ Tw.), to which 3—4½ oz bichromate of potash per 10 gallons (especially in the case of black prints) may be added; the yarns are then rinsed thoroughly, soaped hot (4—8 oz olive soap per 10 gallons), rinsed and dried.

C. DIRECT PRINTING WITH CHROME COLOURS.

Chrome Colours:

Chrome Blue F for Printing
 Chrome Violet M for Printing
 Chrome Fast Blue FR for Printing
 Anthracene Yellow BN, RN, GG.

Recipe V

Directions for Printing:

V. For Anthracene Yellow BN, RN, GG.

20—40 parts Anthracene Yellow are dissolved in
 400 „ water and boiled with
 30 „ wheat starch and
 450 „ tragacanth solution (65:1000); when
 quite cold,
 40— 80 „ acetate of chrome of 32° Tw. are added.
 1000 parts.

Recipe VI

VI. For Chrome Blue F for Printing, Chrome Fast Blue FR for Printing and Chrome Violet M for Printing.

50—150 parts dyestuff are mixed well with
 380—220 „ warm water and
 500—500 „ tragacanth solution (65:1000); when
 quite cold,
 20— 30 „ formic acid 90% and
 50—100 „ acetate of chrome of 32° Tw. are added.
 1000 parts.

Tragacanth Solution 65:1000.

65 parts tragacanth are soaked well in
 435 „ water and left standing for 48 hours; then
 500 „ water are added, the whole being boiled
 until a smooth solution results.

1000 parts.

After printing and drying, steam for $\frac{3}{4}$ to 1 hour in the case of the dyestuffs indicated under No VI (Chrome Blue etc.), then chrome feebly, wash, soap, rinse, and dry. Anthracene Yellow is steamed for about one hour, then washed if necessary, and dried.

D. DIRECT PRINTING WITH PARANITRANILINE RED
(PARA RED OR ICE RED).

Recipe VII

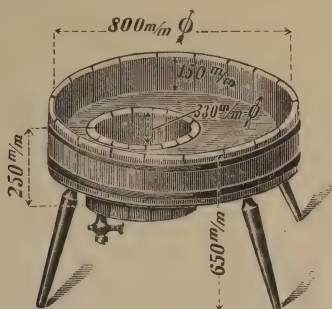
Paranitraniline Red is produced on the fibre by means of direct printing, the yarn being mordanted with Naphtol solution and printed when dry with the diazo solution of Paranitraniline or with Nitrazol C.

Paranitraniline comes in slightly cheaper, while Nitrazol C, the ready diazo combination, is the simpler and more convenient of the two in its application.

Mordanting with Naphtol Solution.

The boiled yarn, bleached if necessary, must be perfectly dry for mordanting.

The yarn is mordanted either in a trough as shown in the sketch below, or in a tramping machine of the kind frequently used for Alizarine Red, with Beta Naphtol, or with Naphtol RC for more bluish shades.



Composition of the Mordanting Liquor.

For 100 lbs cotton yarn:

- I. { 1000 grms. (2 lbs 3¼ oz) Beta Naphtol or Beta Naphtol RC are mixed with
1000 grms. (2 lbs 3¼ oz) caustic soda lye of 75° Tw., then
10 litres (2¼ gallons) boiling water are added, and the whole is stirred until dissolved.

In another vessel,

- II. { 2500 grms. (5½ lbs) castor-oil soap are dissolved in
10 litres (2¼ gallons) boiling water.

Solutions I and II are then mixed together and diluted to 65 litres (13¼ gallons).

An equal quantity of Turkey-red oil may be used in the place of castor-oil soap; with the latter, however, somewhat more bluish and brighter shades are obtained.

In order to increase the stability of the preparation on the fibre, a little antimony paste (15—20 grms. per litre or 2½—3 oz per gallon), potassium sulphite or glucose may be added.

Fill the trough with 15 litres (3½ gallons) of this mordanting liquor, which should be lukewarm (about 40° C. or 105° F.) pass 2 lbs of the yarn through the same, add 900 cc. (19/16 pints) more of the mordanting liquor, pass another 2 lbs of yarn through, and so on until the whole lot of 100 lbs has been passed. Then pass the yarn in lots of 2 lbs at a time once more through the same liquor, wring off, wrap it up in light cotton cloth (calico), and hydroextract well for 15 or 20 minutes.

The yarn is then hung up rather loosely over square sticks (not more than 1 lb for each stick) and well dried for some hours in the drying chamber. This is best done overnight.

The prepared yarn must be dried separately in order to prevent it from coming into contact with acid vapours (for instance, from acetic acid), whereby the colour might become spotted or streaky.

Both the hydroextracted and the dried yarn should be well protected from water drops.

The prepared and well dried yarn should be printed with the diazo solution with the least possible delay.

Recipe VIIa

Printing with Paranitraniline C.

	21 parts	Paranitraniline C are dissolved in
	100 „	boiling hot water with the addition of
	42 „	hydrochloric acid of 36° Tw.; this solution is cooled off quickly to 10° C. (50° F.) by the addition of
	207 „	cold water and ice, and then
	115 „	nitrite of soda solution 1:10 are added in one lot whilst stirring. This solution is left standing for 5 or 10 minutes, until clear, when it is filtered through cloth and stirred into
	440 „	tragacanth solution (65:1000).
		Immediately before use,
(approx.)	25 „	acetate of soda dissolved in
	50 „	water are added cold.
	<hr/> 1000 parts.	

By means of methyl orange paper it is easy to ascertain whether the amount of acetate of soda added is sufficient; acetate of soda should be added until the paper ceases to turn red.

Recipe VIIb

Printing with Nitrazol C.

This method is applicable in those cases particularly in which the diazotising causes difficulties, and it besides renders the use of ice unnecessary.

	90 parts	Nitrazol C are dissolved well by stirring with
	295 „	cold water and allowing to stand for about ½ hour. The solution is then filtered through cloth and immediately before use added to
	500 „	tragacanth solution (65:1000), in which
	30 „	acetate of soda have previously been dissolved; finally
(approx.)	35 „	caustic soda lye of 32° Tw. diluted with
	50 „	water are added.
	<hr/> 1000 parts.	

This print paste must not redden methyl orange paper, but if this be the case, a little more caustic soda lye should be added with care.

The yarn printed with diazotised Paranitraniline or Nitrazol C is dried well and then washed thoroughly, a little hydrochloric acid being to advantage added to the first wash water in order to prevent the white from becoming stained. The yarn is then soaped at about 50° C. (120° F.), rinsed again thoroughly, and dried. If necessary, the yarn may be chemicked in order to clear the white, the red thereby becoming still brighter.

E. DIRECT PRINTING WITH DIAMINE COLOURS.

Diamine Colours are used principally for light shades, the following being those best adapted for direct printing:

For Yellow and Orange:

Thioflavine S
Diamine Yellow CP, N
Diamine Fast Yellow FF, A, B
Diamine Fast Orange EG, ER
Diamine Orange F, G, D, B
Oxy Diamine Orange G, R, RN.

For Pink and Red:

Diamine Rose B extra, BD, FFB
Diamine Fast Scarlet GFF, 4BFF,
4BFS, 5BFF, 7BFF
Diamine Brilliant Scarlet S
Diamine Fast Red F
Diamine Bordeaux S, B
Diamine Brilliant Bordeaux R
Diamine Violet Red
Diamine Brilliant Rubine S.

For Violet:

Diamine Brilliant Violet B, RR
Diamine Fast Violet FFBN, FFRN
Diamine Violet N
Diamine Heliotrope B, G, O.

For Grey and Black:

Diamine Fast Grey BN
Diamine Jet Black Cr, RB, SS, OO
Diamine Fast Black F, X
Diaminogene B, extra.

For Blue:

Diamine Sky Blue FF
Diamine Blue BB, 3B, RW, 3R
Diamine Fast Blue FFB
Diamineral Blue CV, CVB, B, R
Diamine Steel Blue L
Diamine Bengal Blue G, R
Diamine Deep Blue B, R
Diamine Dark Blue B
Diamine Black BH.

For Green:

Diamine Green B, G, CL, FG
Diamine Dark Green N.

For Brown:

Diamine Brown B, 3G, 5G, M, MR,
R, S
Diamine Catechine B, BZ, G, 3G
Diamine Fast Brown G, R, GB
Oxy Diamine Brown RN, 3GN
Cotton Brown A, N
Diamineral Brown G
Diamine Bronze G.

VIII. Printing Recipe:

Recipe VIII

2—15 parts	dyestuff are dissolved in
580 „	water with the addition of
10 „	phosphate of soda and
100 „	glycerine, and mixed with
300 „	tragacanth solution (65:1000).
1000 parts.	

Dissolving the Dyestuffs: The print pastes are best prepared with condensed water; when using calcareous water for dissolving, it is an advantage to add some citrate of ammonia (10—12 oz of 90 Tw. per 10 gallons). When dissolving Diamine Brown M, B, 3G or Diamine Yellow N, it is well to add a little soap.

After printing, the yarn is steamed for $\frac{3}{4}$ to 1 hour without pressure. Diamine Colour prints should be steamed in a very damp condition, by which means the colours are fixed best; the yarn is therefore before the steaming hung in a cool place in order to absorb moisture. Any rinsing after the steaming is in most cases unnecessary.

F. COMBINATION OF DYEING AND DIRECT PRINTING.

The printing and dyeing processes may be combined by either first dyeing the yarns with Diamine or Immedial Colours and over-printing them with darker shades, or by first printing and then dyeing them. The latter method is frequently preferred, because it is the simpler one, and one drying is thereby saved.

Examples :

1. Dye fancy shades with Immedial Colours, and print with Immedial Black.
2. Print with Immedial Colours, particularly Black, on white yarn, and then dye with Diamine Colours.
3. Dye with those Diamine Colours which may be coupled with Nitrazol C, and over-print with the same kind of Diamine Colours; then couple, after having fixed the prints by means of $\frac{3}{4}$ hour's steaming. In this way shade in shade effects of very good fastness to washing, for instance, may be obtained.

DISCHARGE PRINTING.

A. DISCHARGE PRINTING ON DIAMINE COLOURS.

Light and medium shades for discharging are dyed direct; dark shades, however, are as a rule produced by diazotising and developing, or by coupling, because these owing to their good fastness to water and washing do not bleed in the discharging and washing, thus yielding clean discharge effects. The Diamine Colours suited for the various shades for discharge printing will be found in the tables on pages 45—53 of our “Manual of Dyeing”, Vol. IV.

Directions for dyeing, diazotising, developing, and coupling are indicated on pages 7—15 and 37—38 of Volume I of the “Manual of Dyeing”.

The dyeings to be discharged are to advantage rinsed thoroughly, or soaped lightly after the developing or coupling, as the discharge effects will in such case be clearer.

Hyraldite of all the discharging agents exercises the most powerful effect, and is applied the most generally. As compared with the older tin crystals discharges, Hyraldite offers the important advantage of yielding much better discharge effects, the fibre moreover not being tendered in the very least even by prolonged steaming. Zinc dust discharges, likewise used formerly in some cases, have been supplanted practically everywhere by Hyraldite which is simpler in its application.

The following brands of Hyraldite are sold for discharging purposes:

Hyraldite C extra
Hyraldite CW extra
Hyraldite A and W
Hyraldite Special.

Hyraldite A and W are half the strength of Hyraldite C and CW extra. Hyraldite Special is used chiefly for discharging Naphtylamine Claret.

For white discharges, all these brands are suited, but for coloured discharges Hyraldite C extra, A and Hyraldite Special are to be given the preference. Hyraldite CW extra or W are preferred for white discharges on deep shades owing to their action being more powerful than that of the other brands.

IX. Hyraldite White Discharge.

Recipe IX

100—300 parts Hyraldite CW extra or C extra are
heated with
200 „ water and
500 „ British gum thickening (300:1000) or
some other neutral thickening for
 $\frac{1}{4}$ to $\frac{1}{2}$ hour to about 60—70° C.
(140 to 160° F.), and stirred well,
and when dissolved, the paste is
stirred until cold.

1000 parts.

Of the single strength brands Hyraldite A and W, 200 to 500 parts in 1000 parts print paste are required.

Besides British gum, either ordinary gum, tragacanth, or starch-tragacanth thickening may be used as thickeners.

The yarns printed with the discharge are well dried and then steamed for about 5 or 10 minutes. For the steaming, any kind of steam-box may be used, provided that dry hot steam fairly free from air is available. If not already provided with a mantle for heating, it is well to insert a few gilled pipes in order to warm the steam-box before the direct steam enters. If the steaming apparatus is situated some distance from the boiler house, it is well to insert a water-trap into the steam-pipe a short distance from the point at which the steam passes into the steam-box.

After steaming, the yarns are washed, soaped slightly in the case of aftertreated dyeings, rinsed, and dried.

A little alum (4—8 oz per 10 gallons) is frequently added to the first rinsing bath in the case of discharged direct shades.

Hyraldite Coloured Discharges.

For coloured discharges, the same directions as indicated for piece-goods on pages 56—59 of our "Manual of Dyeing", Vol. IV, may be applied, but the print pastes should be slightly less thickened for yarn printing.

B. DISCHARGE PRINTING ON PARANITRANILINE RED.

Regarding the dyeing of Paranitraniline Red see page 39 of Volume I of our "Manual of Dyeing".

The yarn dyed as there indicated is best rinsed very thoroughly, and soaped hot, the red becoming much brighter and a purer white discharge effect resulting.

The discharging is carried out in the same way as indicated for discharging Diamine Colours, the quantities required for Paranitraniline Red being 250—300 parts Hyraldite C extra or CW extra per 1000 parts print paste.

After printing on the discharge, the yarn is steamed as described for the Diamine Colours, and washed.

B. COTTON WARP AND THREAD PRINTING.

For printing cotton warps and cotton yarn in the shape of threads with one-colour stripe patterns, Warp-Printing Machines are used built in various designs. The following sketch shows a machine built by Gebr. Donath Nachf., Chemnitz.

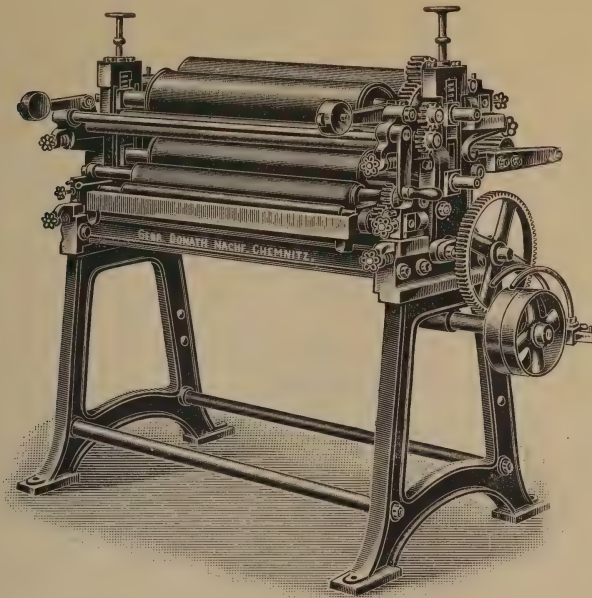


Fig. 3. Warp-Printing Machine.

In this machine the two printing rollers are adjusted one above the other, and the design is produced by grooves running parallel with the axles of the rollers as illustrated in the hank-printing machine on page 1, Fig. 1.

The warp to be printed is passed from above over guiding rollers into the machine and runs in a stretched state between two printing rollers pressing against each other.

Similar machines provided with two pairs of printing rollers are used for producing two-coloured effects.

If designs other than narrow horizontal stripes are to be printed, or multi-coloured designs are to be produced, the warps are printed either by means of hand blocks with suitable patterns, or on the roller-printing machine as used for piece-goods.

In order to prevent the printed design from being distorted during the steaming, washing etc., some weft threads at intervals of about $\frac{1}{2}$ yard are loosely interwoven, which are removed later on before the weaving.

For printing cotton yarn in the shape of threads, the machine illustrated on page 1 may likewise be used; the sketch below shows this machine in use for that purpose.

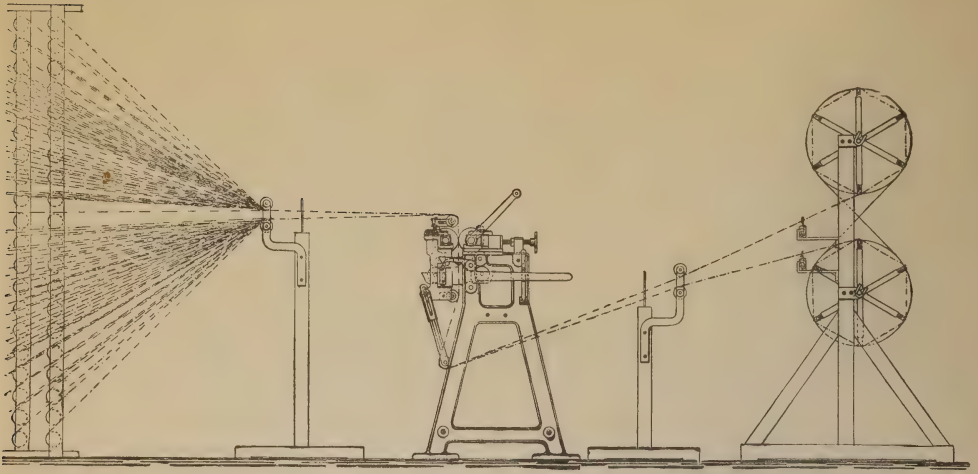


Fig. 4. Hank-Printing Machine used as a Thread-Printing Machine.

For direct printing or discharge printing on cotton warps, the dyestuffs are applied according to the same directions as stated on pages 1 to 11 for printing yarn in the hank.

The steaming of the printed and dried warps is carried out either full width, by rolling them up, if necessary, between blankets, and steaming in the cottage steamer like piece-goods, or, like yarn in hank form, suspending the warps in the steamer over a stick covered with felt, or by depositing them in wire cages.

Any washing of the warps which may be necessary in order to remove the thickening is carried out mostly by hand in an ordinary wooden vat, or by working several times over a winch.

The warps may also be washed on the broad-washing machine; it is then well to pass them through the washing liquor between endless runners of wide mashwork, the thickening being removed by sprinkling water on and squeezing.

A. BASIC COLOURS.

			Printed according to Recipe
No. 1.	20 parts	Thioflavine TCN	I
No. 2.	20 parts	Thioflavine T	I
No. 3.	20 parts	Diamond Phosphine GG	I
No. 4.	20 parts	Diamond Phosphine R	I
No. 5.	20 parts	Diamond Phosphine D	I
No. 6.	20 parts	Para Phosphine GG	I
No. 7.	20 parts	Para Phosphine G	I
No. 8.	20 parts	Tannin Orange GG	I
No. 9.	20 parts	Tannin Orange R	I
No. 10.	20 parts	Irisamine G	I
No. 11.	20 parts	Safranine S No. 150	I
No. 12.	20 parts	Tannin Heliotrope	I
No. 13.	15 parts	Solid Green Crystals O	I
No. 14.	10 parts	New Methylene Blue GG	I
No. 15.	20 parts	New Methylene Blue N	I
No. 16.	20 parts	New Methylene Blue R	I

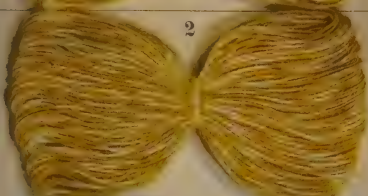
To be understood per 1000 parts print paste.



BASIC COLOURS



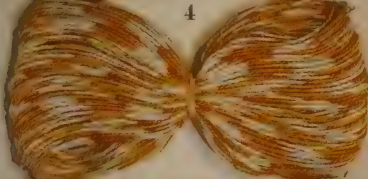
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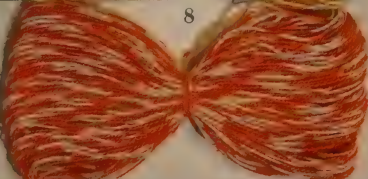
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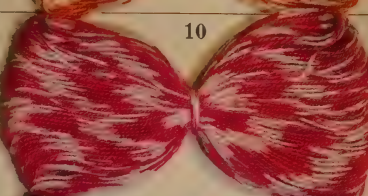
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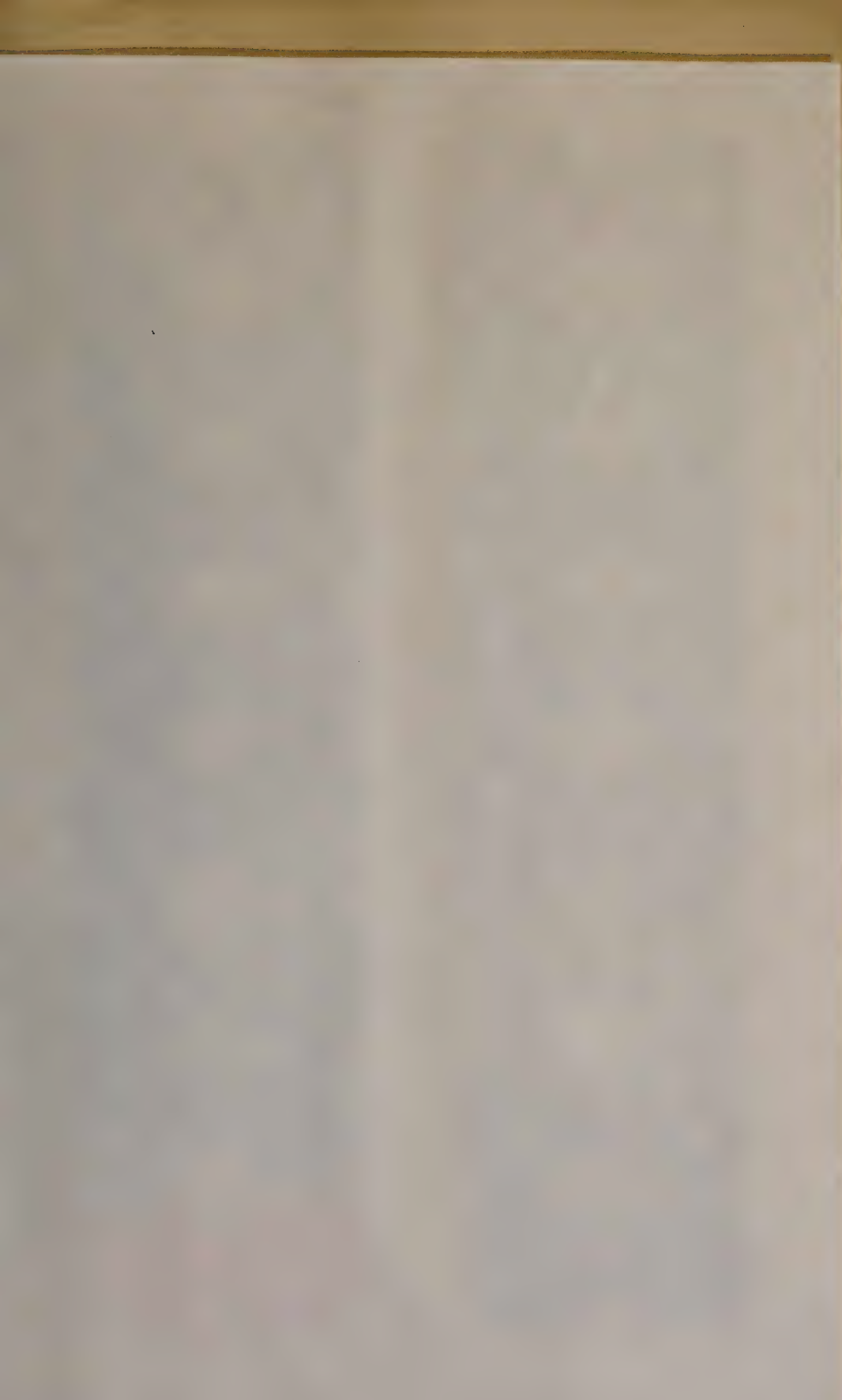


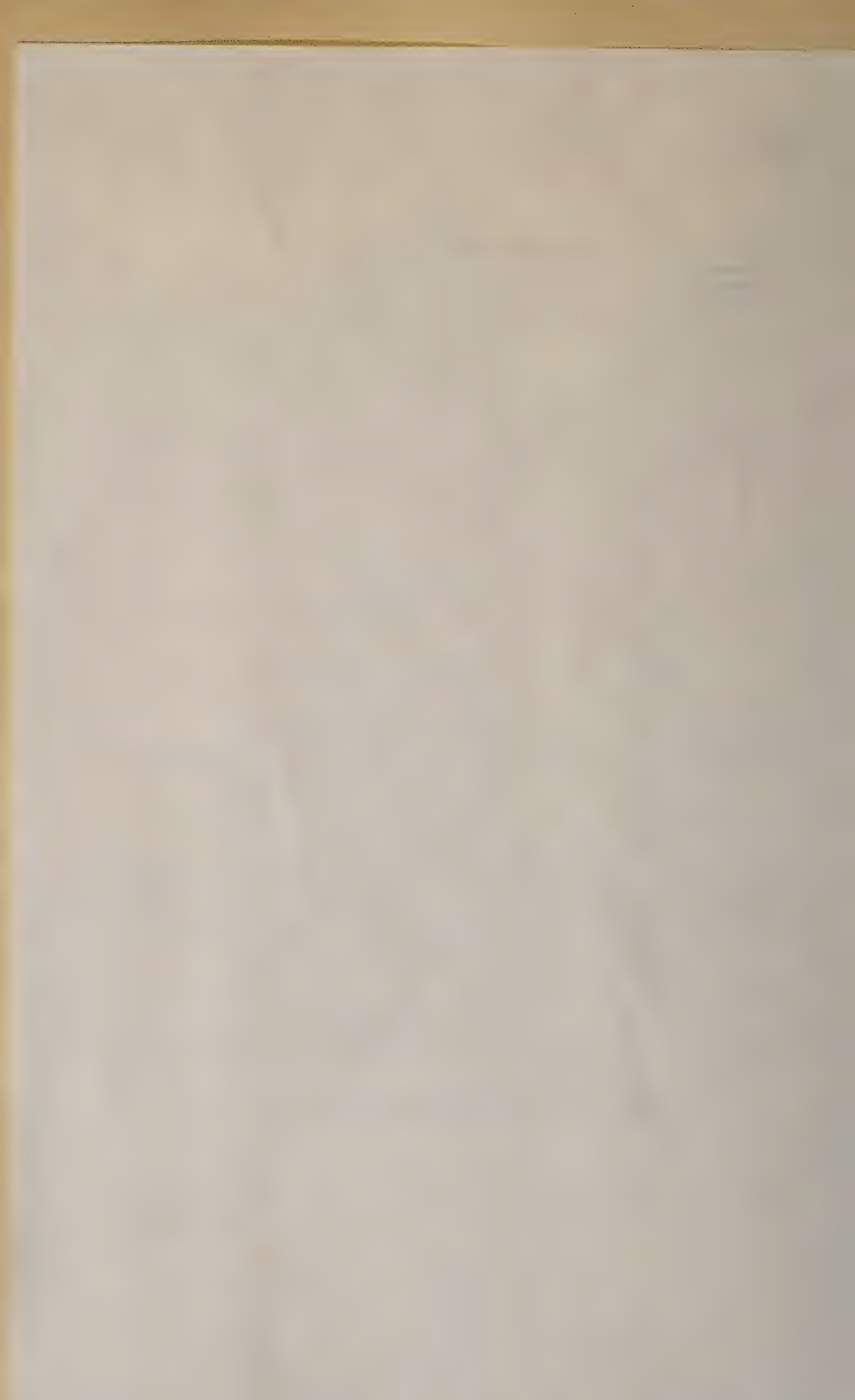
16

A. BASIC COLOURS (Continued).

			Printed according to Recipe
No. 17.	15	parts Crystal Violet 10B	I
No. 18.	20	parts Victoria Blue B	I
No. 19.	15	parts Methyl Violet BB 72 No. 0	I
No. 20.	20	parts Indazine M	I
No. 21.	30	parts Naphtindone BB	III
No. 22.	100	parts Acetinduline R paste	II
No. 23.	15	parts Methylindone B	I
No. 24.	26	parts Irisamine G	I
	4	parts Thioflavine TCN	
No. 25.	22	parts Safranine GGS	I
	8	parts Thioflavine T	
No. 26.	18	parts Thioflavine T	I
	2	parts New Methylene Blue N	
No. 27.	15	parts Thioflavine T	I
	5	parts New Methylene Blue N	
No. 28.	10	parts Thioflavine T	I
	10	parts New Methylene Blue N	
No. 29.	10	parts New Methylene Blue N	I
	10	parts Safranine S No. 150	
No. 30.	4,6	parts Diamond Phosphine D	I
	0,4	parts New Blue B	
No. 31.	32	parts Diamond Phosphine GG	I
	4	parts Safranine S No. 150	
	4	parts New Methylene Blue N	
No. 32.	15	parts Thioflavine T	I
	10	parts Safranine GGS	
	5	parts New Methylene Blue N	

To be understood per 1000 parts print paste.





BASIC COLOURS



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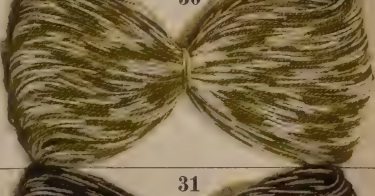
27



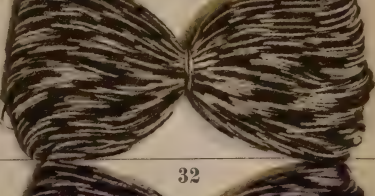
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B. IMMEDIAL COLOURS.

		Printed according to Recipe
No. 33.	30 parts Immedial Yellow GG double for printing pat.	IV
No. 34.	30 parts Immedial Orange C double for printing pat.	IV
No. 35.	25 parts Immedial Yellow GG double for printing pat. 5 parts Immedial Green GG double for printing pat.	IV
No. 36.	30 parts Immedial Yellow GG double for printing pat. 2 parts Immedial Green GG double for printing pat.	IV
No. 37.	6 parts Immedial Indone B double for printing pat. 4 parts Immedial Green GG double for printing pat.	IV
No. 38.	20 parts Immedial Bordeaux G double for printing pat.	IV
No. 39.	40 parts Immedial Cutch O double for printing pat.	IV
No. 40.	40 parts Immedial Brown BR double for printing pat.	IV
No. 41.	20 parts Immedial Indone Violet B double for printing pat.	IV
No. 42.	60 parts Immedial Indone Violet B double for printing pat.	IV
No. 43.	50 parts Immedial Olive 3G double for printing	IV
No. 44.	40 parts Immedial Deep Green G double for printing pat.	IV
No. 45.	80 parts Immedial Purple C pat.	IV
No. 46.	35 parts Immedial Deep Green G double for printing pat. 5 parts Immedial Orange C double for printing pat.	IV IV
No. 47.	20 parts Immedial Indone B double for printing pat.	IV
No. 48.	20 parts Immedial Indone R double for printing pat.	IV

To be understood per 1000 parts print paste.



IMMEDIAL COLOURS

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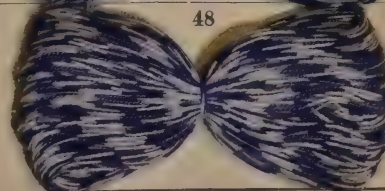
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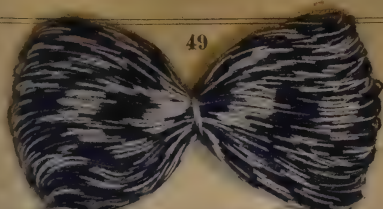
B. IMMEDIAL COLOURS (Continued).

		Printed according to Recipe
No. 49.	50 parts Immedial Indone R double for printing pat.	IV
No. 50.	50 parts Immedial Direct Blue B double for printing pat.	IV
No. 51.	40 parts Immedial Green GG double for printing pat. 10 parts Immedial Yellow GG double for printing pat.	IV
No. 52.	28 parts Immedial Yellow GG double for printing pat. 2 parts Immedial Brown BR double for printing	IV
No. 53.	6 parts Immedial Carbon B for printing	IV
No. 54.	9 parts Immedial Carbon B for printing 1 part Immedial Indone B double for printing pat.	IV
No. 55.	60 parts Immedial Carbon B for printing 20 parts Immedial Deep Green G double for printing pat.	IV
No. 56.	60 parts Immedial Carbon B for printing	IV
No. 57.	Printed with 60 parts Immedial Carbon B for printing dyed with 0,7 % Diamine Fast Yellow B 0,3 % Diamine Fast Blue FFB pat.	IV
No. 58.	Printed with 60 parts Immedial Carbon B for printing dyed with 0,9 % Diamine Fast Blue FFB pat.	IV
No. 59.	Printed with 60 parts Immedial Carbon B for printing dyed with 1,5 % Diamine Fast Scarlet 4BFF pat.	IV
No. 60.	Printed with 60 parts Immedial Carbon B for printing dyed with 0,8 % Diamine Fast Violet FFBN pat.	IV
No. 61.	Dyed with Immedial Yellow D pat. over-printed with 60 parts Immedial Carbon B for printing	IV
No. 62.	Dyed with Immedial Indogene GCL conc. pat. over-printed with 60 parts Immedial Carbon B for printing	IV
No. 63.	Dyed with Immedial Black NNR conc. over-printed with 60 parts Immedial Carbon B for printing	IV
No. 64.	Dyed with Immedial Green GG extra pat. over-printed with 60 parts Immedial Carbon B for printing	IV

To be understood per 1000 parts print paste.



IMMEDIAL COLOURS



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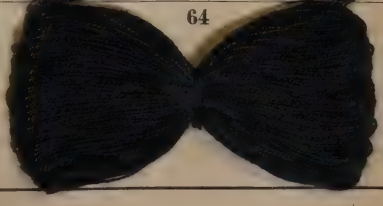
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C. CHROME COLOURS.

		Printed according to Recipe
No. 65.	40 parts Anthracene Yellow GG	V
No. 66.	40 parts Anthracene Yellow BN	V
No. 67.	40 parts Anthracene Yellow RN	V
No. 68.	150 parts Chrome Blue F for printing pat.	VI
No. 69.	60 parts Chrome Fast Blue FR for printing pat.	VI
No. 70.	10 parts Chrome Violet M for printing pat.	VI
No. 71.	50 parts Chrome Violet M for printing pat.	VI

D. PARANITRANILINE RED (ICE RED).

No. 72.	Paranitraniline Red	VII
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E. DIAMINE COLOURS.

No. 73.	2 parts Diamine Rose BD pat.	VIII
No. 74.	7 parts Diamine Fast Yellow FF pat. 3 parts Diamine Sky Blue FF	VIII
No. 75.	8 parts Diamine Fast Violet FFBN pat.	VIII
No. 76.	6 parts Diamine Fast Scarlet 4BFF pat. 2 parts Diamine Fast Red F	VIII
No. 77.	10 parts Diamine Catechine G pat.	VIII
No. 78.	8 parts Diamine Fast Grey BN	VIII
No. 79.	6 parts Diamine Fast Yellow FF pat.	VIII
No. 80.	5 parts Diamine Blue BB	VIII

To be understood per 1000 parts print paste.



CHROME COLOURS. PARANITRANILINE RED. DIAMINE COLOURS



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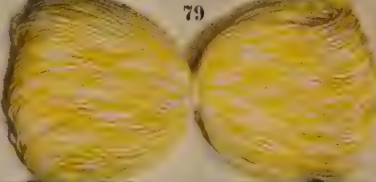
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F. DISCHARGE PRINTING ON DIAMINE COLOURS AND PARANITRANILINE RED.

a) Diamine Colours dyed direct.					Discharged according to Recipe
No. 81..	0,25%	Diamine Rose BG pat.			IX
No. 82.	1,25%	Diamine Fast Scarlet 5BFF pat.			IX
No. 83.	0,25%	Diamine Violet N			IX
No. 84.	0,5 %	Diamine Sky Blue FF			IX
No. 85.	0,6 %	Diamine Fast Blue FFB pat.			IX
No. 86.	0,25%	Diamine Green B			IX
No. 87.	0,25%	Diamine Catechine G pat.			IX
No. 88.	0,25%	Diamine Grey G pat.			IX
b) Diamine Colours diazotised and developed with Beta Naphtol, Phenylene Diamine, etc.					Discharged according to Recipe
No. 89.	2 %	Diaminogene Sky Blue N, developed with Beta Naphtol			IX
No. 90.	2 %	Diaminogene Blue NA pat. " " " "			IX
No. 91.	3 %	Diaminogene Blue 3RN pat. " " " "			IX
No. 92.	3 %	Diaminogene Blue 6RN pat. " " " "			IX
No. 93.	4,8 %	Diamine Azo Scarlet B " " " "			IX
No. 94.	4,8 %	Diamine Azo Bordeaux B " " " "			IX
No. 95.	1,6 %	Diaminogene extra " " " "			IX
No. 96.	3,2 %	Oxy Diaminogene OB pat. " " " "			IX
	1,2 %	Diaminogene Blue NB pat.			





DISCHARGE PRINTING ON DIAMINE COLOURS AND PARANITRANILINE RED



**F. DISCHARGE PRINTING ON DIAMINE COLOURS AND
PARANITRANILINE RED (Continued).**

Discharged
according to
Recipe

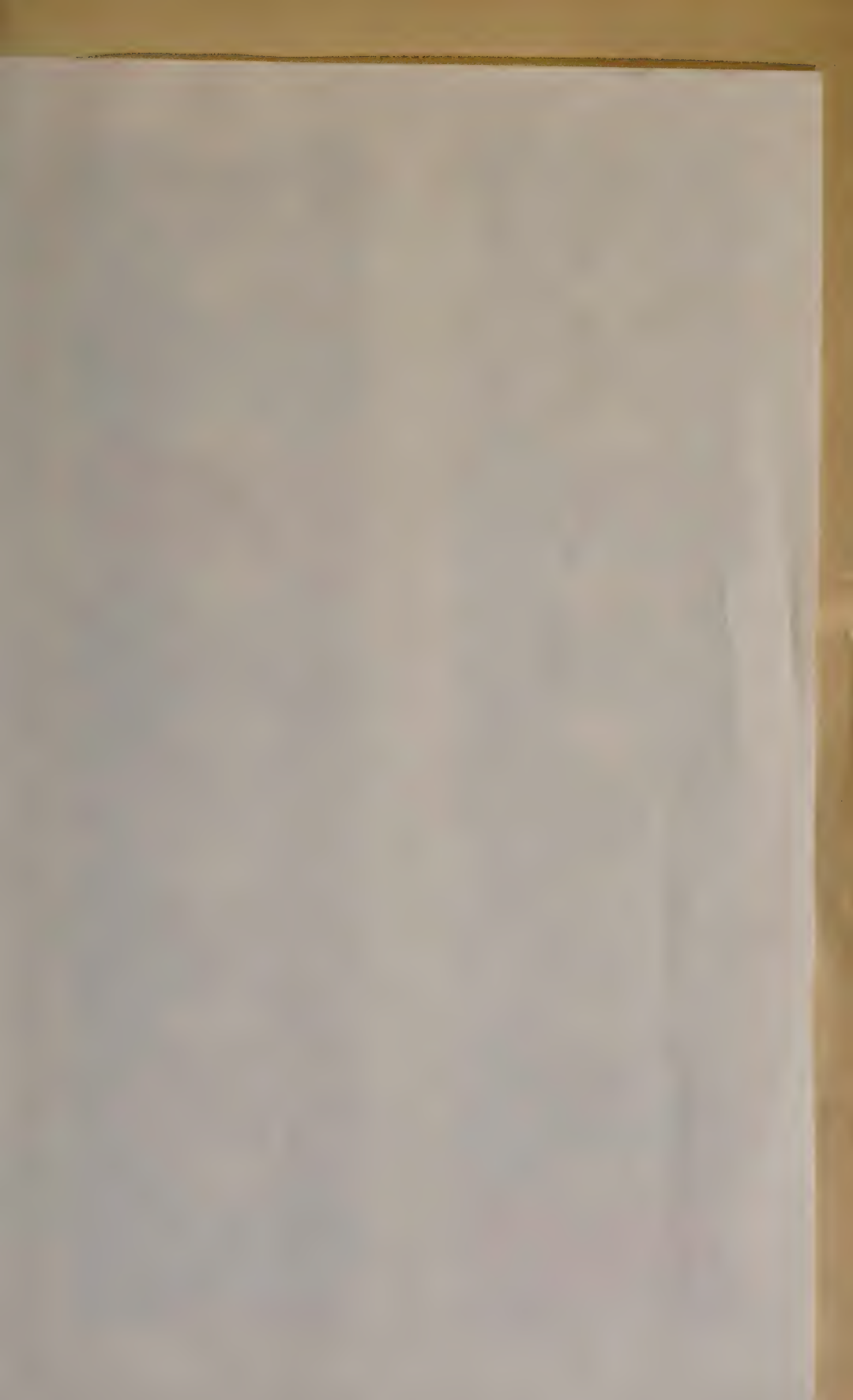
No. 97.	4,5 %	Diamine Black DB, developed with Phenylene Diamine	IX
No. 98.	4,5 %	Oxy Diaminogene OT pat. „ „ „ „	IX

c) Diamine Colours coupled with Nitrazol C.

No. 99.	4,8 %	Diamine Nitrazol Scarlet A, coupled with Nitrazol C	IX
No. 100.	4,8 %	Diamine Nitrazol Bordeaux GB pat. „ „ „	IX
No. 101.	3 %	Diamine Nitrazol Orange R pat. „ „ „	IX
No. 102.	2 %	Oxy Diamine Brown RN „ „ „	IX
No. 103.	2,4 %	Diamine Nitrazol Brown GF pat. „ „ „	IX
No. 104.	2,5 %	Diamineral Blue CVB „ „ „	IX
No. 105.	2,5 %	Diamine Bronze G „ „ „	IX
No. 106.	1,5 %	Diamine Brown MR „ „ „	IX
No. 107.	3,5 %	Diamine Brown S „ „ „	IX
No. 108.	4,5 %	Diamine Nitrazol Green GF pat. „ „ „	IX
No. 109.	2,4 %	Diamine Nitrazol Green GF pat. „ „ „	IX
	1,6 %	Oxy Diamine Yellow CR „ „ „	
No. 110.	1,25 %	Diamine Grey G pat. „ „ „	IX
No. 111.	3,5 %	Diamine Nitrazol Black BB pat. „ „ „	IX

d) Ice Colours (Paranitraniline Red; Ice Red).

No. 112.	Paranitraniline Red	IX
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DISCHARGE PRINTING ON DIAMINE COLOURS AND PARANITRANILINE RED



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101



102



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104



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109



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111



112

Without guarantee.

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